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BOARD OF PATENT APPEALS
AND INTERFERENCES

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Paper No. 22

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

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SEP 29 2004

U.S. PATENT AND TRADEMARK OFFICE
BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte NAUM V. GITIS
and VICTOR DUNN

Appeal No. 2003-0065
Application 09/491,284¹

ON BRIEF

Before JERRY SMITH, BARRETT, and BLANKENSHIP, Administrative Patent Judges.

BARRETT, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134 from the final rejection of claims 1-4 and 10-39. Claims 5-9 and 40-69 stand withdrawn.

We affirm-in-part.

¹ Application for patent filed January 26, 2000, entitled "Magnetic Head Slider with Resistance to Debris Accumulation," which is a continuation of Application 08/161,234, filed December 2, 1993, now U.S. Patent 6,084,743, which is a continuation-in-part of Application 07/992,270, filed December 14, 1992, now abandoned.

BACKGROUND

The invention relates to the design of magnetic recording heads and sliders which contact the recording medium during the reading/writing process where the leading edge is shaped so as to push away debris as the head slides across the surface.

Claims 1 and 10 are reproduced below.

1. A recording head for reading and writing information with respect to a rotating disk medium, said head including a pad having a working surface which contacts said medium during the reading/writing process, a magnetic pole tip structure being embedded within said pad, said pad having a leading edge and a trailing edge with said leading edge facing in the general direction of relative motion between said head and said medium, and wherein said leading edge has a narrower width than said trailing edge.

10. A slider, comprising:

a transducer for transferring information to and from a rotating disk medium during read and write operations; and

a pad which maintains substantially continuous contact with the medium during the read and write operations, wherein the pad has a leading edge that faces into a general direction of relative motion between the slider and the medium, the pad has a trailing edge that faces away from the direction, the leading edge has a width that is substantially perpendicular to the direction, the trailing edge has a width that is substantially perpendicular to the direction, and the width of the leading edge is substantially narrower than the width of the trailing edge.

The examiner relies on the following references:

Brezoczky et al. (Brezoczky)	4,819,091	April 4, 1989
Kubo et al. (Kubo)	4,901,185	February 13, 1990
Saitoh et al. (Saitoh)	4,926,274	May 15, 1990
Fukuoka et al. (Fukuoka)	5,541,789	July 30, 1996
(effective filing date July 25, 1991)		

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Claim 10 stands rejected under 35 U.S.C. § 102(e) as being anticipated by Fukuoka.

Claims 1, 2, 10-12, 17, 18, 26, 31, and 33-39 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Brezoczky.

Claims 13 and 19 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Brezoczky.

Claims 3, 4, 14-16, 20-25, and 32 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Brezoczky and Fukuoka.

Claim 27 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Brezoczky and Kubo.

Claims 28 and 29 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Brezoczky and Kubo, further in view of Fukuoka.

Claim 30 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Brezoczky and Kubo, further in view of Saitoh.

We refer to the final rejection (Paper No. 15) (pages referred to as "FR__") and the examiner's answer (Paper No. 20) (pages referred to as "EA__") for a statement of the examiner's rejection, and to the substitute appeal brief (Paper No. 19) (pages referred to as "Br__") for a statement of appellants' arguments thereagainst.

OPINION

Grouping of claims

Appellants designate the following grouping of claims according to the rejection (Br6):

Ancipation - Furuoka

Claim 10

Anticipation - Brezoczky

Claims 1, 2, 10-12, 26, 31, and 33-39

Claims 17 and 18

Obviousness - Brezoczky

Claims 13 and 19

Obviousness - Brezoczky and Fukuoka

Claim 3

Claim 4

Claims 14 and 15

Claim 16

Claims 20 and 21

Claim 22

Claims 23 and 24

Claim 25

Claim 32

Obviousness - Brezoczky and Kubo

Claim 27

Obviousness - Brezoczky, Kubo, and Fukuoka

Claims 28 and 29

Obviousness - Brezoczky, Kubo, and Saitoh

Claim 30

Anticipation - Fukuoka

Claim 10

The examiner finds that Fukuoka, Fig. 7, shows a slider 1 with a transducer 4 and a pad comprising the U-shaped bottom planar surface of the slider (EA3).

Appellants argue that Fukuoka fails to teach a slider that includes a pad, and fails to teach a slider in which the leading edge is narrower than the trailing edge (Br7). It is argued that

if the bottom surface of the slider is characterized as the pad, the entire rigid body slider must constitute the pad, in which case the leading edge is not narrower than the trailing edge (Br8). Appellants refer to a Board opinion in Application 08/161,234, wherein a panel held that it was error for the examiner to rely on only part of a load-bearing surface in a patent to Coughlin to meet the claim.

The examiner relies on the bottom surface of the slider as the pad and does not address appellants' argument that the whole slider must be considered the pad (EA8). The examiner dismisses the arguments in the '234 application as irrelevant because the Coughlin reference has not been applied (EA8).

Initially, we note that claim 10 does not recite slider structure other than the transducer and the pad and claim 10 does not define the structure of the pad. Therefore, nothing in claim 10 prevents the pad from reading on slider 1 in Fig. 7. However, the pad must be the whole slider, not just the bottom surface as interpreted by the examiner. The pad in Fukuoka is basically a rectangular parallelepiped with two corners rounded off and it is not fair to say that the leading edge has a width substantially narrower than the trailing edge when only part of the edge is narrower. While an argument could have been made that it would have been obvious to shape the whole slider 1 in the U-shape of the bottom surface, the present rejection is based

on anticipation. The rejection of claim 10 over Fukuoka is reversed.

Anticipation - Brezoczky

Claims 1, 2, 10-12, 26, 31, and 33-39

The examiner finds these claim anticipated by the slider and read/write head in Figs. 2 and 5 of Brezoczky (EA3).

Although appellants group these claims together, appellants argue claims 1 and 10 separately. Thus, we take claims 1 and 2 to stand or fall together and claims 10-12, 26, 31, and 33-39 to stand or fall together.

Claims 1 and 2

Appellants argue that Brezoczky fails to teach a magnetic pole tip structure embedded within a pad because Fig. 5 shows the head formed on surface 58 normal to the surface 54 of the slider and not embedded therein (Br10).

The examiner states that "embed" is defined as "to make an integral part of" and, therefore, finds that the head 17 in Fig. 5 is embedded in the pad 52 (EA8).

This is the first time this claim interpretation has been explained. Claim 1 recites "a magnetic pole tip structure being embedded within said pad." The qualification "within said pad" means the definition of "embed" is "to enclose closely in or as if in a matrix" or "to place or fix firmly in surrounding

matter," Webster's New Collegiate Dictionary (G.&C. Merriam Co. 1977). In our opinion, the definition "to make an integral part of" must be read in the context of the other definitions to mean enclosed or surrounded, but, in any case, the claim term "embedded within" compels this choice of meanings. The head 17 in Brezoczky is not "embedded within" the crystal sheet 52. While Fig. 6 shows a pole tip embedded in the slider, it is not embedded within in the pads 64. The rejection of claims 1 and 2 is reversed.

Claims 10-12, 26, 31, and 33-39

Appellants also argue that Brezoczky fails to teach a slider that includes a pad with a wedge-shaped portion (Br10). It is argued that the thin sheet of single crystal material in Fig. 5 has high hardness and therefore does not constitute a pad (Br10). It is stated (Br10) that claim 10 recites "A slider, comprising ... a pad which maintains substantially continuous contact with the medium during the read and write operations."

We do not find where the examiner addresses these arguments. Nevertheless, the thin sheet of single crystal 52 attached to the slider body 56 in Fig. 5 is considered a "pad." The contacting members 64 attached to the slider body 62 in Fig. 6 are also considered "pads." The claim does not define the composition of the pad so as to distinguish over the sheet 52 or members 64. We also consider the slider 16 made of a single crystal in Fig. 2 to

be a "pad" since claim 10 does not define the slider to have any structure besides a transducer and a pad. The slider material is in direct contact with the disk surface during normal operation (col. 3, lines 30-34; col. 4, lines 12-15). The slider has a triangular shape to counteract any tendency for the slider to be moved off-track by the film of air (col. 4, lines 65-68); the shape would also inherently push debris to the side, but we note that no function for appellants' shape has been claimed. The rejection of claims 10-12, 26, 31, and 33-39 is sustained.

Claims 17 and 18

Appellants argue that claims 17 and 18 distinguish over Brezoczky for the reason stated for claim 10 and, furthermore, that Brezoczky fails to teach "the pad includes a wedge-shaped portion" as recited in claim 17 (Br11).

The thin sheet 52 in Fig. 5, the leading member 64 in Fig. 6, and the slider 16 in Fig. 2 all have wedge shapes. Appellants have not said why they do not. The rejection of claims 17 and 18 is sustained.

Obviousness - Brezoczky

Claims 13 and 19

Claim 13 is selected as representative.

The examiner states (FR2): "The Examiner takes Official [N]otice that it is [sic, was] old and well known in the art to

space the trailing edge of a slider pad from the trailing edge. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to space the pad from the trailing edge as doing this would decrease the amount of contact between the disk and pad, thus creating less friction and wear therebetween."

Appellants argue that claim 13 recites "the wide part of the V-shaped portion is spaced from the trailing edge," and Brezoczky "fails to teach or suggest that the single crystal material should be spaced from the leading or trailing edge of the slider body" (Br12).

The examiner maintains the rejection (EA8-9).

It is not clear exactly what embodiment is being claimed. Claim 13 depends on claim 10, which recites a pad in substantially continuous contact with the medium. Figures 3A and 3B show a V-shaped pad where the wide part is the trailing edge. The specification states that "[a]lthough Figures 3A and 3B show the entire slider being shaped in an overall triangular or V-shape, it should be understood that in some cases only the front portion or leading section of the contact pad structure may be shaped in this way" (spec. at 9). We assume appellants are trying to claim a shape like one of the rails 72 in the flying slider of Fig. 6B which has a symmetrical knife-edge profile; that is, the V-shaped portion refers to a distinct portion of the

pad and the overall shape includes a V-shaped portion and another portion. Appellants' argument that Brezoczky "fails to teach or suggest that the single crystal material should be spaced from the leading or trailing edge of the slider body" (Br12) is confusing because no slider body is claimed and the only "trailing edge" claimed is the trailing edge of the pad in claim 10.

The examiner's reasoning does not address the actual claim limitation. The rejection mentions spacing the trailing edge of the pad from the trailing edge, but does not say the trailing edge of what--perhaps the examiner means the trailing edge of the pad is spaced from the trailing edge of the slider as argued by appellants. The claim is directed to the wide part of the V-shaped portion of the pad being spaced from the trailing edge of the pad. In our opinion, it would have been apparent to one of ordinary skill in the art that only the front portion of the V-shaped slider and crystal sheet (pad) in Brezoczky needs to have a V-shape to prevent the slider from being moved off-track by the air film (col. 4, lines 65-68) and, therefore, it would have been obvious to provide an area of the pad in back of the V-shaped portion so that the wide part of the V-shaped portion of the pad is spaced from the trailing edge of the pad. For example, the square pads 64 in Fig. 6 of Brezoczky can be thought of as two V-shaped portions back-to-back, indicating that there

can be a pad portion in addition to the leading V-shaped pad portion. The rejection of claims 13 and 19 is sustained.

Obviousness - Brezoczky and Fukuoka

The examiner finds that Brezoczky shows a V-shaped pad but does not show a U-shaped, parabolic-shaped, or hyperbolic-shaped pad. The examiner finds that Fukuoka shows a U-shaped pad in Fig. 7 and it states in column 10, lines 30-32 that the pad may be "a parabola, a circle or an oval." The examiner concludes that it would have been obvious to re-shape the pad in Brezoczky to be different shapes as taught by Fukuoka to "permit the sliding characteristics of the pad to be altered to the specific needs of various disk [sic] drives" (FR3; EA5) and because "[n]o unobvious result is seen in changing the shape of the pad of Brezoczky" (FR3; EA5).

Claim 3

Although the rejection of parent claim 1 as anticipated by Brezoczky has been reversed, this is one of the rare situations where the added reference to Fukuoka cures the deficiencies in the rejection of the parent claim.

Appellants argue Brezoczky does not teach or suggest a U-shape and if Brezoczky was modified to have a U-shape it is unclear how read/write head 17 could be properly formed on surface 58 which would be curved (Br12).

We agree with the examiner's conclusion that it would have been obvious to make the thin sheet 52 in Brezoczky U-shaped in view of the U-shaped surface taught in Fig. 7 in Fukuoka. Appellants do not address or show error in the examiner's rejection which relies on Fukuoka. If the slider in Brezoczky was modified to have a U-shape as taught by the contact surface of Fukuoka, as stated by the examiner, it is clear that the read/write head 17 would be formed on the flat trailing surface 58 (see EA9). The surface 58 would not be curved. We note that Fukuoka is one of those rare references that cures the deficiency in the rejection of independent claim 1. Fukuoka teaches embedding the magnetic pole tip within the pad (slider) and it would therefore have been obvious in view of this teaching to embed the pole tip in Brezoczky within the pad. Alternatively, since obviousness is based on the collective teachings of the references, it would have been obvious for the entire pad in Fig. 7 of Fukuoka to be U-shaped, not just the surface, since Brezoczky teaches that the entire pad can be triangular. We treat the rejection of a dependent claim as including an implicit rejection of the claim from which it depends. Thus, we sustain the rejection of claims 1 and 3.

Claim 4

As with claim 3, we conclude that Fukuoka cures the deficiencies in the rejection of parent claim 1.

Appellants argue Brezoczky does not teach or suggest that the pad has a parabolic shape (Br12). It is argued that the passage at col. 10, lines 30-32, of Fukuoka refers to the leading edge of slider 1, not the bottom surface (BR12). Furthermore, it is argued, if Brezoczky was modified so that the slider body had a parabolic shape it is unclear how read/write head 17 could be properly formed on surface 58 which would be curved (Br12).

Fukuoka teaches that one end portion of the slider in Fig. 7 has an outer shape defined by part of a parabola, a circle, or an oval (col. 10, lines 30-32). We interpret this to refer to the outer shape of the bottom surface since the description immediately follows the description of Fig. 6 which states that the surface has a circular or oval outer shape and since what is being discussed is the shape of the bottom surface. Moreover, Fig. 7 clearly shows a surface which can be described as an "outer shape" defined by "part of" a parabola, a circle, or an oval. Thus, Fukuoka teaches a parabolic-shaped contact surface. It would have been obvious to modify the slider in Brezoczky to have a parabolic shape in view of Fukuoka or, alternatively, for the entire slider in Fukuoka to have a parabolic shape in view of the teaching in Brezoczky that the slider and pad can have a

uniform shape. We treat the rejection of a dependent claim as including an implicit rejection of the claim from which it depends. Thus, we sustain the rejection of claims 1 and 4.

Claims 14 and 15

Claim 14 is taken as representative.

Appellants argue that claim 14 recites "the pad includes a U-shaped portion ... and a wide part of the U-shaped portion is spaced from the leading edge," which distinguishes over Brezoczky for this reason as well as the reasons mentioned for claims 3 and 13 (Br12).

Appellants do not argue why the examiner erred in the rejection which includes Fukuoka and, in fact, appellants do not mention Fukuoka at all. The rejection must be sustained for this reason. In addition, we agree with the examiner that Fig. 7 of Fukuoka teaches a U-shaped surface which would have suggested to one skilled in the art of slider design modifying the triangular thin sheet 52 in Fig. 5 of Brezoczky to have a U-shape. The wide part of the U-shaped surface in Fukuoka is spaced from the leading edge. The rejection of claims 14 and 15 is sustained.

Claim 16

Appellants argue that claim 16 recites "the wide part of the U-shaped portion is spaced from the trailing edge," which distinguishes over Brezoczky for this reason as well as the reasons mentioned for claims 14 and 15 (Br12).

Appellants do not argue why the examiner erred in the rejection which includes Fukuoka and, in fact, appellants do not mention Fukuoka at all. The rejection must be sustained for this reason. In addition, the wide part of the U-shaped portion in Fig. 7 of Fukuoka is spaced from the trailing edge as claimed and the modification of the pad in Brezoczky to have a U-shape in view of Fukuoka would also have this characteristic. The rejection of claim 16 is sustained.

Claims 20 and 21

Claim 20 is taken as representative.

Appellants argue that claim 20 recites "the pad includes a parabolic-shaped portion ... and a wide part of the parabolic-shaped portion is spaced from the leading edge," which distinguishes over Brezoczky for this reason as well as the reasons mentioned for claims 4 and 13 (Br13).

Appellants do not argue why the examiner erred in the rejection which includes Fukuoka and, in fact, appellants do not mention Fukuoka at all. The rejection must be sustained for this reason. In addition, we agree with the examiner that Fukuoka

teaches that the contact surface can have a parabolic shape (col. 10, lines 30-32) and that it would be obvious to one skilled in the art to modify the pad and slider in Brezoczky to have a parabolic shape in view of this teaching. Appellants' reference to claim 13 is not relevant to this rejection. The rejection of claims 20 and 21 is sustained.

Claim 22

Appellants argue that "[c]laim 21 [sic, 22] recites 'the wide part of the parabolic-shaped portion is spaced from the trailing edge'" (Br13), which distinguishes over Brezoczky for this reason as well as the reasons mentioned for claims 20 and 21 (Br13).

Appellants do not argue why the examiner erred in the rejection which includes Fukuoka and, in fact, appellants do not mention Fukuoka at all. The rejection must be sustained for this reason. In addition, since Fukuoka shows the wide part of the curved portion in Fig. 7 spaced from the trailing edge, i.e., only the front part of the surface is curved and the sides have a straight portion, it would have been obvious to make the wide part of a parabolic-shaped portion taught by Fukuoka spaced from the trailing edge. The rejection of claim 22 is sustained.

Claims 23 and 24

Claim 23 is taken as representative.

Appellants argue that claim 23 recites "the pad includes a hyperbolic-shaped portion," which Brezoczky fails to teach (Br13). It is argued that the examiner's assertion that Fukuoka teaches a slider 1 with a hyperbolic-shaped bottom portion is incorrect because the passage at column 10, lines 30-32, refers to the leading edge of the slider (Br13). Moreover, it is argued, if Brezoczky was modified so the slider body had a hyperbolic shape, it is unclear how read/write head 17 could be properly formed on surface 58 which would be curved (Br13).

Fukuoka teaches that one end portion of the slider in Fig. 7 has an outer shape defined by part of a parabola, a circle, or an oval (col. 10, lines 30-32). We interpret this to refer to the outer shape of the bottom surface since the description immediately follows the description of Fig. 6 which states that the surface has a circular or oval outer shape and since what is being discussed is the shape of the bottom surface. Moreover, Fig. 7 clearly shows a surface which can be described as an "outer shape" defined by "part of" a parabola, a circle, or an oval. While Fukuoka does not expressly teach a hyperbolic shape, Fukuoka's teachings of parabolic, circular, and oval shapes would have suggested to one of ordinary skill in the art that other shapes, whether or not describable by a mathematical function,

would be equally obvious. No unexpected results are asserted for the hyperbolic shape as opposed to the V-shape, U-shape, and parabolic shape in other claims. In fact, the specification states that "it makes little difference whether the curved leading edge is actually 'U'-shaped, parabolic, hyperbolic, or described by some other mathematical function" (spec. at 10). Therefore, we conclude that the choice of a hyperbolic shape would have been obvious over the various shapes taught by Fukuoka. The rejection of claims 23 and 24 is sustained.

Claim 25

Appellants argue that claim 25 recites "the wide part of the hyperbolic-shaped portion is spaced from the trailing edge," which distinguishes over Brezoczky for this reason as well as the reasons mentioned for claims 23 and 24 (Br13).

Appellants do not argue why the examiner erred in the rejection which includes Fukuoka and, in fact, appellants do not mention Fukuoka at all. The rejection must be sustained for this reason. In addition, since Fukuoka shows the wide part of the curved portion in Fig. 7 spaced from the trailing edge, i.e., only the front part of the surface is curved and the sides have a straight portion, it would have been obvious to make the wide part of a hyperbolic-shaped portion suggested by Fukuoka spaced from the trailing edge. The rejection of claim 25 is sustained.

Claim 32

Appellants argue that claim 32 distinguishes over Brezoczky for the reasons mentioned for claim 10 (Br13). This does not constitute a separate argument for patentability of claim 32. The rejection of claim 32 is sustained.

Obviousness - Brezoczky and Kubo

Claim 27

The examiner finds that Brezoczky does not show the leading edge of the pad spaced from the leading edge of the slider, but that "Kubo et al shows a contact slider in Figure 10 that has a leading edge of a pad 104 spaced from a leading edge of the slider body due to the tapered portion 40" (EA5). The examiner concludes that it would have been obvious to provide a taper to the pad in Brezoczky in order to space the leading edge of the pad from the leading edge of the slider as doing so would permit less contact area between the pad and the disk, thereby creating less friction and wear (EA5-6).

Appellants argue that claim 27 recites "the leading edge of the pad is spaced from the leading edge of the slider" and Brezoczky fails to teach that the crystal material should be spaced from the leading or trailing edge of the slider body (Br13-14). It is argued that Kubo says nothing about a pad, much less a pad with a leading edge spaced from the leading edge of the slider.

The examiner maintains that spacing the leading edge of a slider pad from the leading edge of a slider was old and well known in the art of magnetic head sliders and, therefore, it would have been obvious to have spaced the leading edge of the pad from the leading edge of the slider (EA9). The examiner also repeats the obviousness reasoning of the rejection (EA9-10).

Parent claim 10 does not recite any slider structure other than the transducer and the pad; for example, it does not recite a pad attached to a slider. No drawing figure appears to correspond to this claim. The slider could consist only of the pad and the head, such as the one-piece slider 16 and head 17 in Figs. 2 and 3 of Brezoczky. Thus, it is indefinite what slider structure is being referred to in claim 27. We leave it to the examiner and appellants to fix this problem. For purposes of the appeal, we assume that the slider is a separate structure to which the pad is attached. We also note that claim 27 does not say in which direction the leading edge of the pad is spaced from the leading edge of the slider, although this is a matter of claim breadth, not indefiniteness.

Numeral 104 in Kubo is a leading surface of the slider that serves as a contact surface. Numeral 40 points to an inclined edge. The leading surface 104 is spaced from the front edge of the slider by the length determined by the inclined edge 40. While Kubo does not show a separate pad attached to a slider

body, Brezoczky is relied on to show a separate thin sheet 52 attached to a slider body 56. Kubo teaches that the sliding surface can be spaced from the front edge of the slider and we agree with the examiner that it would have been obvious to space the thin sheet 52 in Brezoczky, which forms the sliding surface, from the front edge of the slider body 56 in view of Kubo. Appellant has provided no reasons why it would have been unobvious to space the thin sheet 52 in Brezoczky from the front edge of the slider body 56. The rejection of claim 27 is sustained.

Obviousness - Brezoczky, Kubo, and Fukuoka

Claims 28 and 29

Appellants argue that claims 28 and 29 distinguish over Brezoczky for the reasons mentioned for claim 27 (Br14). This does not constitute a separate argument for patentability. The rejection of claims 28 and 29 is sustained.

Obviousness - Brezoczky, Kubo, and Saitoh

Claim 30

Appellants argue that claim 30 distinguishes over Brezoczky for the reasons mentioned for claim 27 (Br13). This does not constitute a separate argument for patentability of claim 30. The rejection of claim 30 is sustained.

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CONCLUSION

The rejection of claim 10 under 35 U.S.C. § 102(e) over Fukuoka is reversed.

The rejection of claims 1 and 2 under § 102(b) over Brezoczky is reversed. The rejection of claims 10-12, 17, 18, 26, 31, and 33-39 under § 102(b) over Brezoczky is sustained.

The rejection of claims 13 and 19 under § 103(a) over Brezoczky is sustained.

The rejection of claims 3, 4, 14-16, 20-25, and 32 under § 103(a) over Brezoczky and Fukuoka is sustained. The rejection of claims 3 and 4 impliedly includes a rejection of claim 1.

The rejection of claim 27 under § 103(a) over Brezoczky and Kubo is sustained.

The rejection of claims 28 and 29 under § 103(a) over Brezoczky, Kubo, and Fukuoka is sustained.

The rejection of claim 30 under § 103(a) over Brezoczky, Kubo, and Saitoh is sustained.

In summary, at least one rejection of claims 1, 3, 4, and 10-39 is sustained and the rejection of claim 2 is reversed.

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No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED-IN-PART

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